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On minimization of cavity drag of hydrofoils

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Abstract

© 2015, Allerton Press, Inc. In this work we investigate the limiting values of the lift and drag coefficients of profiles in the Helmholtz—Kirchhoff (infinite cavity) flow. The coefficients are based on the wetted arc length of profile surfaces. For a given value of the lift coefficient and additional restrictions from above and below on the velocity distribution along the profile surface we find global minimum of the drag coefficient.

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Keywords

cavity flows, extremal problem, Helmholtz—Kirchhoff model, ideal fluid